



Meru Networks AP332

Installation Guide



<AP332 Part Number>

September 2013

Copyright © Meru Networks, Inc., 2003–2013. All rights reserved.
Other names and brands may be claimed as the property of other

MERU NETWORKS, INC.

Limited Product Warranty

This Limited Product Warranty applies to the original end-user customer of the Meru product which you purchased for your own use, and not for resale ("Product"), from Meru Networks, Inc. ("Meru") or its authorized reseller ("Reseller").

Limited Warranties

- One-year limited hardware warranty: Meru warrants to you that Meru hardware (other than Third Party Products as described below) will be free from defects in materials and workmanship for a one-year period after the date of delivery of the applicable product to you from Meru or its Reseller (the "Hardware Warranty Period"). If Meru receives written notice from you of such defects during the Hardware Warranty Period, Meru will, at its option, either repair or replace Meru hardware that Meru determines to be defective. Replacement products may be remanufactured units, and will be warranted for the remainder of the original Hardware Warranty Period, or if greater, for thirty days from delivery of such replacement. Should Meru be unable to repair or replace the Meru hardware, Meru (or its Reseller, as applicable) will refund to you the purchase price of the Product.
- 90-Day Limited Software Warranty: Meru warrants to you that, for a 90-day period after the date of delivery of the applicable product to you from Meru or its Reseller (the "Software Warranty Period"), when properly installed and used, (a) the media on which the Meru software is provided will be free from defects in materials or workmanship; and (b) the Meru software will substantially conform to the functional specifications in the applicable documentation. If Meru receives written notice from you of a breach of this warranty during the Software Warranty Period and is able to reproduce the defect, Meru will, at its option, either repair or replace the defective Meru software. Should Meru be unable to repair or replace the Meru software, Meru (or its Reseller, as applicable) will refund to you the purchase price of the Product.

Exclusions

The warranty on the Product shall not apply to defects resulting from the following:

- Alteration or modification of the Product in any way, including without limitation configuration with software or components other than those supplied by Meru or integration with parts other than those supplied by Meru.
- Abuse, damage or otherwise being subjected to problems caused by negligence or misapplication (including without limitation improper or inadequate maintenance or calibration), relocation of the products (including without limitation damage caused by use of other than Meru shipping containers), or use of the products other than as specified in the applicable Meru product documentation (including without limitation incompatible operating environments and systems), or improper site preparation or maintenance.
- Damage as a result of accidents, extreme power surge, extreme electromagnetic field, acts of nature or other causes beyond the control of Meru.
- Use of the Product with software, interfacing, parts or supplies not supplied by Meru.

The warranty on the Product does not apply if the Product is sold, or in the case of software, licensed, for free for evaluation or demonstration purposes.

Meru expressly disclaims any warranty or obligation to support the Product for all operating environments – for example, as illustration and not limitation, Meru does not warrant or ensure interoperability of the Product with future telecommunication systems or other future software or hardware.

You understand and acknowledge that the Products may generate, use or radiate radio frequency energy and may interfere with radio communications and/or radio and television receptions if is not used and/or installed in accordance with the documentation for such products. WHILE MERU USES COMMERCIALY REASONABLE EFFORTS TO ENSURE COMPLIANCE OF THE PRODUCTS WITH APPLICABLE UNITED STATES FEDERAL COMMUNICATIONS COMMISSION AND PROTECT AGAINST HARMFUL INTERFERENCES, YOU ACKNOWLEDGE AND AGREE THAT INTERFERENCES WITH RADIO COMMUNICATIONS AND/OR RADIO AND TELEVISION RECEPTIONS MAY OCCUR AND THAT MERU WILL NOT BE LIABLE FOR ANY DAMAGES OR INCONVENIENCE BASED ON SUCH INTERFERENCES.

Third Party Products - The above Limited Warranties are exclusive of products manufactured by third parties ("Third Party Products"). If such third party manufacturer provides a separate warranty with respect to the Third Party Product, Meru will include such warranty in the packaging of the Meru Product.

Return procedures

To obtain warranty service you must: (a) obtain a return materials authorization number ("RMA#") from Meru by contacting rmaadmin@merunetworks.com, and (b) deliver the Product, in accordance with the instructions provided by Meru, along with proof of purchase in the form of a copy of the bill of sale including the Product's serial number, contact information, RMA# and detailed description of the defect, in either its original package or packaging providing the Product with a degree of protection equivalent to that of the original packaging, to Meru

at the address below. You agree to obtain adequate insurance to cover loss or damage to the Product during shipment.

If you obtain an RMA# and return the defective Product as described above, Meru will pay the cost of returning the Product to Meru. Otherwise, you agree to bear such cost, and prior to receipt by Meru, you assume risk of any loss or damage to the Product. Meru is responsible for the cost of return shipment to you if the Meru Product is defective.

Returned products which are found by Meru to be not defective, returned out-of-warranty or otherwise ineligible for warranty service will be repaired or replaced at Meru's standard charges and shipped back to you at your expense.

At Meru's sole option, Meru may perform repair service on the Product at your facility, and you agree to provide Meru with all reasonable access to such facility and the Product, as required by Meru. On-site repair service may be available and is governed by the specific terms of your purchase.

All replaced parts, whether under warranty or not, are the property of Meru.

Warranty limitations

THE WARRANTIES SET FORTH ABOVE ARE EXCLUSIVE AND NO OTHER WARRANTY, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED BY MERU, TO THE MAXIMUM EXTENT PERMITTED BY LAW. THERE ARE NO OTHER WARRANTIES RESPECTING THE PRODUCT AND DOCUMENTATION AND SERVICES PROVIDED UNDER THIS AGREEMENT, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF DESIGN, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (EVEN IF MERU HAS BEEN INFORMED OF SUCH PURPOSE), TITLE OR AGAINST INFRINGEMENT OF THIRD PARTY RIGHTS. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED UNDER APPLICABLE LAW, THEN SUCH IMPLIED WARRANTY SHALL BE LIMITED IN DURATION TO THE HARDWARE AND SOFTWARE WARRANTY PERIODS DESCRIBED ABOVE.

NO AGENT OF MERU IS AUTHORIZED TO ALTER OR EXCEED THE WARRANTY OBLIGATIONS OF MERU.

MERU SPECIFICALLY DOES NOT WARRANT THAT THE MERU SOFTWARE WILL BE ERROR FREE OR OPERATE WITHOUT INTERRUPTION.

THE REMEDIES IN THIS LIMITED PRODUCT WARRANTY ARE YOUR SOLE AND EXCLUSIVE REMEDIES, AND MERU'S SOLE AND EXCLUSIVE LIABILITY, FOR BREACH OF THE HARDWARE OR SOFTWARE WARRANTY SET FORTH ABOVE.

Limitations of Liability

You acknowledge and agree that the consideration which you paid to Meru does not include any consideration by Meru of the risk of consequential, indirect or incidental damages which may arise in connection with your use of, or inability to use, the Product. **THUS, MERU AND ITS RESELLER WILL NOT BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOST PROFITS, LOST BUSINESS, LOST DATA, LOSS OF USE, OR COST OF COVER INCURRED BY YOU ARISING OUT OF OR RELATED TO YOUR PURCHASE OR USE OF, OR INABILITY TO USE, THIS PRODUCT OR THE SERVICES, UNDER ANY THEORY OF LIABILITY, WHETHER IN AN ACTION IN CONTRACT, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE) OR OTHER LEGAL OR EQUITABLE THEORY, EVEN IF MERU OR ITS RESELLER KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY EVENT, THE CUMULATIVE LIABILITY OF MERU OR ITS RESELLER FOR ALL CLAIMS WHATSOEVER RELATED TO THE PRODUCT OR THE SERVICE WILL NOT EXCEED THE PRICE YOU PAID FOR THE PRODUCT OR SERVICES GIVING RISE TO SUCH CLAIMS.**

THE LIMITATIONS SET FORTH HEREIN ARE INTENDED TO LIMIT THE LIABILITY OF MERU AND ITS RESELLERS AND SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

The jurisdiction applicable to you may not allow the limitations of liability or damages set forth above, in which case such limitation shall only apply to you to the extent permitted in such jurisdiction.

Additional Information

This Limited Product Warranty shall be governed by and construed in accordance with the laws of the State of California, U.S.A., exclusive of its conflict of laws principles. The U.N. Convention on Contracts for the International Sale of Goods shall not apply.

This Limited Product Warranty is the entire and exclusive agreement between you and Meru with respect to its subject matter, and any modification or waiver of any provision of this statement is not effective unless expressly set forth in writing by an authorized representative of Meru.

All inquiries or claims made under this Limited Product Warranty must be sent to Meru at the following address:

Meru Networks Inc.,
894 Ross Drive, CA 94087, USA
Tel: 408-215-5300
Fax: 408-215-5301
Email: support@merunetworks.com

Table of Contents

- About AP332 1
 - Features 2
 - IEEE Std 802.11ac in AP332 2
 - Installation Location 3
 - Safety Precautions 4
- Installing AP332e 5
 - Before You Begin 5
 - Package Contents 5
 - Kensington Lock 6
 - Power Options 6
 - AP332e Antennas 7
 - Radio-Antenna-Port Mappings 7
 - Attaching Antennas 7
- Installing AP332i 9
 - Before You Begin 9
 - Package Contents 9
 - Kensington Lock 10
 - Power Options 10
- AP332 Mounting 11
 - Horizontally on a Shelf 11

Vertically on a Wall	12
Installation	12
Removal	16
Box Mount	16
Below a Standard Suspended Ceiling	17
AP Installation over Standard 9/16" or 15/16" T-Bar	18
AP Removal from Standard 9/16" or 15/16" T-Bar	20
AP Installation over Interlude & Silhouette T-Bars	21
AP Removal from Interlude & Silhouette T-Bar	24
AP Installation over a Dropped Ceiling Bevel Tile	25
AP Removal from a Dropped Ceiling Bevel Tile	28
Above a Standard Suspended Ceiling	28
LED Lights	30
LED Activity and Meaning	32
Changing LED Appearance	32
Next Steps	33
Approved Antennas	35
Regulatory Information	37
Regulatory Specifications 38	
Declaration of Conformity, Federal Communication Commission 38	
Manufacturer Information	38
Declaration of Conformity	39
Declaration of Conformity, Industry Canada 40	
Manufacturer Information	40

Declaration of Conformity	40
Declaration of Conformity, R&TTE Directive 1999/5/EC	42
Declaration of Conformity	42
VCCI Statement	45
General Information of RF Exposure	46
International Guidelines	46
FCC Guidelines	46
Industry Canada Guidelines	47
Remarks	49
Maximum EIRP	49
Dual Concurrent Same Band Operation	49
Manufacturing Information	49
Distributed Antenna Systems (DAS)	49
Air Handling Space Requirements	50
Frequencies Blocked for Regulatory Compliance	50
Restriction of Hazardous Substances	51
European Community	51
China	51
Underwriters Laboratories	51
Cautions and Warnings	53

Cautions 53

Warnings 55

1

About AP332

The AP332 Access Point series delivers high performance, full-speed, Wi-Fi certified 802.11ac connectivity while simultaneously supporting legacy 802.11a/b/g/n devices.

AP332 is available in two models AP332i and AP332e.

Features

TABLE 1: *AP332 Feature List*

AP332i	AP332e
AP332i Access Point is an internal-antenna AP with two dual-band 802.11n radios and 3x3 MIMO and internal antennas	AP332e Access Point is an external-antenna AP with two dual-band 802.11n radios and 3x3 MIMO and external antennas.
Supports 802.11n with channel bonding in both 2.4GHz and 5GHz frequency bands. Channel bonding combines two 20 MHz channels into a single-wide 40 MHz channel for increased throughput.	
Supports Plug and Play deployment using centralized controller platforms.	
Supports multi-layered security including Enterprise WPA2 features such as automatic traffic inspection.	
Supports Standard 802.3af PoE and for many 802.3at devices.	
Air Traffic Control technology for 802.11n devices and legacy a/b/g devices.	
Channel span architecture that requires no channel planning or configuration.	
Supports up to 128 clients per radio regardless of the encryption in use.	
DFS capability (in permitted regions)	
Support for wired stations via the secondary Ethernet interface.	
Per-packet data rates up to 450Mbps.	
Mesh and VPN capability with appropriate controller licenses.	

Installation Location

All AP332 interconnected equipment must be contained within the same building, including the interconnected equipment's associated LAN connection. Ceiling mount is recommended but wall mount is also supported. In addition, the AP332 should be mounted in a location that meets the following conditions:

- **Unobstructed access to stations** - relatively unobstructed access to the stations the AP serves. Select a location with minimal physical obstructions between the AP and the wireless stations. In an office with cubicles, mounting the APs below a hanging ceiling or the wall near the ceiling provides the least obstructed communications path. On a wall, orient the AP332e horizontally so that you can read the Meru logo without tilting your head at 90 degrees - this orientation provides optimum MIMO performance.

- **Access to power** - access to wall outlet or to a Power over Ethernet (PoE) connection to the network switch servicing the controller.
- **Capacity Planning** - AP332 is capable of associating up to 128 clients per radio or 256 clients per system. For optimum performance, Meru Networks recommend planning up to 50 clients per radio for a mixed WLAN voice, video, and data. Users can, however, achieve higher client capacity in a data traffic only environment. Refer to the Meru Deployment Guides on the support site for more information.
- Install APs toward the center of the building.
- Place APs about 80 feet apart.
- Do not install APs near metal objects, such as heating ducts, metal doors, or electric service panels.
- If you install an AP332 on a pole, its coverage will be a half spherical shape. Mounting two AP332i's (back to back) on a pole does not provide full coverage (spherical shape). This could potentially interfere with each other resulting in poor coverage.



With grant of additional regulatory approvals and Permit-but-Ask by US Federal Communication Commission, users can configure two radios in AP332 on the same band (i.e., both radios are on the 2.4 GHz but in the different or same channels, or both radios are on the 5.x GHz but in the different or same channels). However, user shall expect performance deterioration due to RF collision, collocation, or co-channel interference (CCI). It is important that the users reduce AP332 transmit power, for each radio, by at-least 3 dBm for its default setting. It is also recommended to apply such use case in AP332e with pigtail-attached external antennas only.

Safety Precautions

IMPORTANT—Read and follow the regulatory instructions in Appendix A before installing and operating this product.

If an optional power supply is used, it must be one supplied by Meru Networks.



This product is intended to be supplied by a UL Listed power supply marked Class 2 or LPS and rated minimum 12Vdc, 2A. For Power over Ethernet, an 802.3af or 802.3at connection must be used.

The AP332e is intended only for installation in Environment A as defined in IEEE 802.3af. All interconnected equipment must be contained within the same building, including the interconnected equipment's associated LAN connection.

2

Installing AP332e

This chapter provides all the information that users need to install Meru AP332e. After users completing installation procedure, see the Meru System Director 6.0 Configuration guide for detailed instructions on the various configuration options.

Follow all safety precautions mentioned in the [“Safety Precautions”](#) on **page 4** section.

Before You Begin

This section provides information that users should know before installing AP332e.

Package Contents

The AP332e shipping package should contain the following. Please contact Meru, if packages do not contain any of the following items.

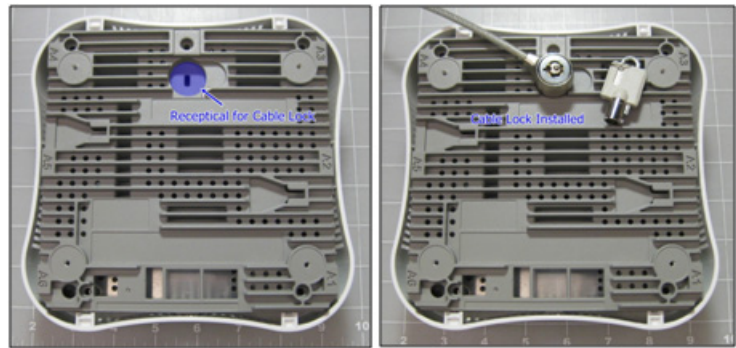
TABLE 1: *Package Contents*

Item	Model Number	Quantity
AP332e	AP332e	1
Dual band single feed paddle antenna with RP-SMA connector	ANT-ABGN-0406-W	6
15/16" T-Bar & Wall-mount combo adapter	650-00232	1
9/16" T-bar Adapter	650-00233	1
Wall-mount bracket	650-00234	1
Wall-mount hardware kit (4 spacers, M3x10 & M3x30 screws)	886-00098	1

Kensington Lock

The AP332e has an access slot at the back to support Kensington Lock. User can lock the AP332e with a standard security cable, such as those used to secure laptop computers. See [“AP332 Kensington lock” on page 6](#) for location of AP332 Kensington Lock.

Figure 1: AP332 Kensington lock



Power Options

A power source is needed to power the AP332e. The AP332e requires either IEEE Std 802.3af or IEEE Std 802.3at compatible external Power-over-Ethernet (PoE) switch or PoE injector. If the PoE power source is not available, a 12-V DC power (2A rated) must be supplied.



When connected to an IEEE Std 802.3af PoE power source, both USB and the secondary Ethernet port (G2) shall be disabled due to power limitations.



AP332 is intended to be supplied by a UL listed power supply marked Class 2 or LPS and rated minimum 12Vdc, 2A. If an optional power supply is used, it must be one supplied by Meru Networks.

AP332e Antennas

Radio-Antenna-Port Mappings

The following table lists which radio is associated with each antenna.

TABLE 2: *Radio-Antenna-Port Mappings*

Antenna Port	Radio / Channel
A1	Radio 2
A2	Radio 2
A3	Radio 2
A4	Radio 1
A5	Radio 1
A6	Radio 1

Attaching Antennas

An AP332e has six external antenna ports, labeled A1 - A6, to be used for attaching the antennas supplied with the AP. Do not leave any antenna connector open. All connectors on the AP must be terminated either with antennas or with 50 ohm Reverse Polarity SMA terminators. For a list of approved terminators, see <http://www.merunetworks.com/merusupport>.

Antennas attached to a specific radio in AP332e must all be of the same model. In case of replacement, user must replace all the antennas.

3

Installing AP332i

This chapter provides all the information that users need to install Meru AP332i. After users completing installation procedure, see the Meru System Director 6.0 Configuration guide for detailed instructions on the various configuration options.

Follow all safety precautions mentioned in the [“Safety Precautions”](#) on **page 4** section.

Before You Begin

This section provides information that users should know before installing AP332i.

Package Contents

The AP332i shipping package should contain the following. Please contact Meru, if packages do not contain any of the following items.

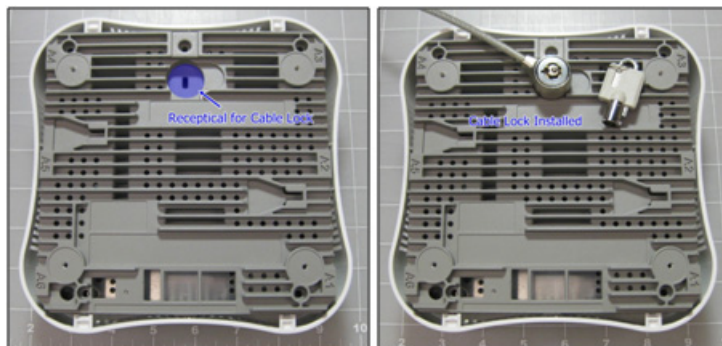
TABLE 3: *Package Contents*

Item	Model Number	Quantity
AP332i	AP332i	1
Dual band Six Internal Antenna (within AP332i)	MERU-PI623	1
15/16" T-Bar & Wall-mount combo adapter	650-00232	1
9/16" T-bar Adapter	650-00233	1
Wall-mount bracket	650-00234	1
Wall-mount hardware kit (4 spacers, M3x10 & M3x30 screws)	886-00098	1

Kensington Lock

The AP332i has an access slot at the back to support Kensington Lock. Users can lock the AP332i with a standard security cable, such as those used to secure laptop computers. See [“AP332 Kensington lock” on page 10](#) for location of AP332 Kensington Lock.

Figure 2: AP332 Kensington lock



Power Options

A power source is needed to power the AP332i. The AP332i requires either IEEE Std 802.3af or IEEE Std 802.3at compatible external Power-over-Ethernet (PoE) switch or PoE injector. If PoE power source is not available, 12-V DC power (2A rated) must be supplied.



When connected to an IEEE Std 802.3af PoE power source, both USB and the secondary Ethernet port (G2) shall be disabled due to power limitations.



AP332i is intended to be supplied by a UL listed power supply marked Class 2 or LPS and rated minimum 12Vdc, 2A. If an optional power supply is used, it must be one supplied by Meru Networks.

4

AP332 Mounting

AP332 ships with several different mounting bracket components that allow for a variety of mounting options. You can mount an AP332 in any of the following ways:

You can mount an AP332e in any of the following ways:

- *“Horizontally on a Shelf” on page 11*
- *“Vertically on a Wall” on page 12*
- *“Below a Standard Suspended Ceiling” on page 17*
- *“Above a Standard Suspended Ceiling” on page 28*



Read and follow the regulatory instructions in Appendix A before installing and operating this product.

Horizontally on a Shelf

When mounting an AP332 horizontally, place it on the desired surface and connect the power and network cables. Optional stands (MNT-FEET-SET-X5) can be applied underneath to raise AP332 for additional cabling space.

The accessory required for such installation is listed below:

Item	Model Number	Quantity
Stands (Optional)	MNT-FEET-SET-X5	1 (set)

Vertically on a Wall

Installation

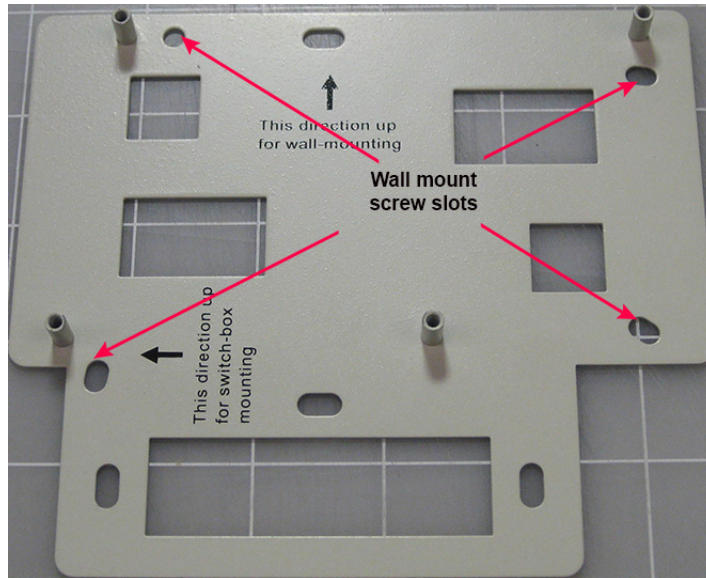
The AP332 ships with a metal bracket (650-00234) that can be used for wall mounting. This bracket is used in conjunction with the plastic 15/16" T-Bar Adapter/Wall Mount bracket (650-00232) that easily locks the AP into place.

The accessory required for such installation is listed below:

Item	Model Number	Quantity
15/16" T-bar & wall-mount combo adapter	650-00232	1
Wall-mount bracket	650-00234	1
Wall-mount hardware kit (4 spacers, M3x10 & M3x30 screws)	886-00098	1

1. User should bench test this mounting hardware in order to familiarize with the locking mechanism prior to actual installation.
2. Determine the desired location for mounting.
3. Use the wall mount bracket as a template for screw holes and cable cutout.
 - User may need to cut a hole in the wall or ceiling in the cable cutout area in order to hide the cables during installation.
 - User may also use the optional RJ45 cable extension, if user do not want to cut a hole in the wall or ceiling.
4. Place the metal bracket against the wall. It should be oriented such that the indicator text for wall-mounting is pointing upwards.
5. Attach the bracket to the wall using screws at the appropriate screw locations as indicated in *[“AP332 Wall Bracket”](#) on page 13*. Recommend #6, #8 (M3, M3.5).

Figure 3: AP332 Wall Bracket



6. Orient 15/16" T-Bar adapter/Wall mount adapter to line up with posts on wall mount bracket.
7. AP locking mechanism should be facing away from bracket.
8. Position the adapter over posts on wall mount bracket.
 - User may mount the wall mount adapter directly to the wall mount bracket or use the included option spacers to allow additional clearance between the AP and bracket. See [“AP332 Wall Bracket without spacers” on page 13](#) and [“AP332 Wall Bracket with spacers” on page 14](#).

Figure 4: AP332 Wall Bracket without spacers

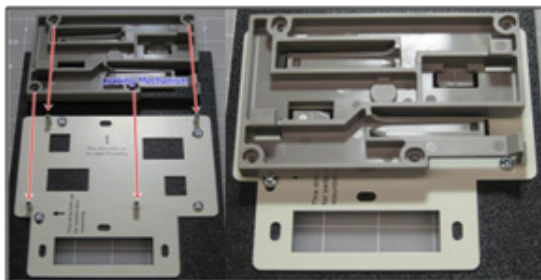
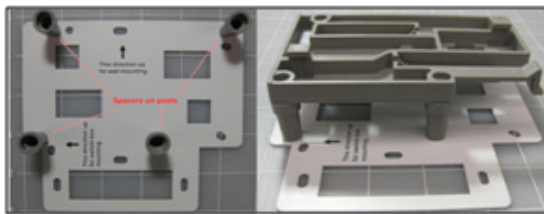


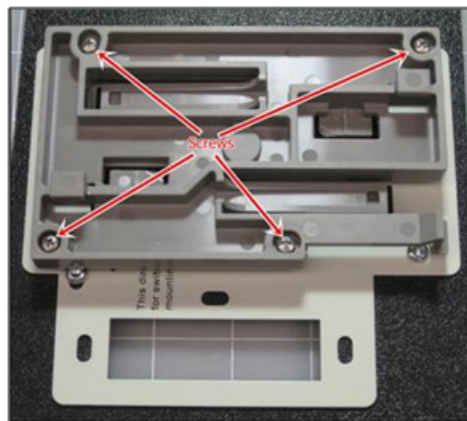
Figure 5: AP332 Wall Bracket with spacers



9. Secure the adapter to the wall mount bracket with the screws provided:

- Use the 4 short screws for installation without spacers
- Use the 4 long screws for installation with spacers

Figure 6: AP332 adapter to the wall mount bracket



10. Orient the AP so that the 2 mounting pins align with the receiving slots.

Figure 7: Attaching the AP to the Wall Mount

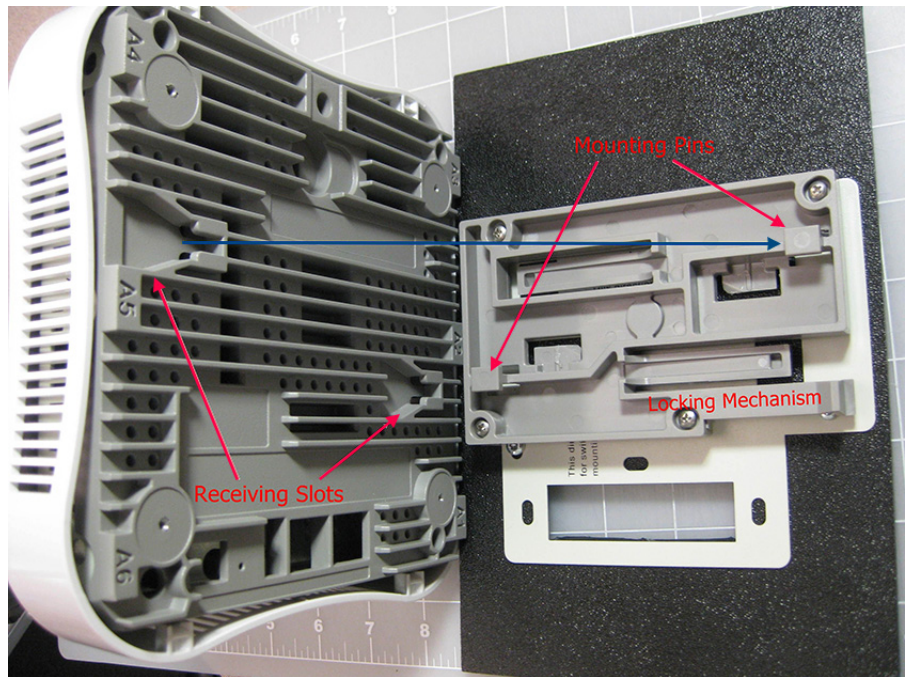


Figure 5 shows an AP332i model being attached to the bracket, but the process is identical for either AP.

11. The Meru logo on the front of the AP should face up and be readable. The ports on the AP should be in line with the cable cutout on the wall mount bracket.
12. Make any necessary cable connections at this time (Ethernet, power, locking cable).
13. Carefully position the AP over the adapter bracket pins and slide the AP gently from left to right until the locking mechanism “clicks” into place
14. Verify that the AP comes online.

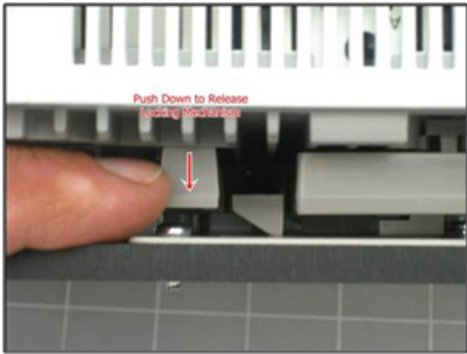
Figure 8: *Successful installation (with optional spacers)*



Removal

To remove the AP from the wall mount, depress the locking mechanism tab toward the wall and slide the AP from right to left until it releases.

Figure 9: *AP332 removal*



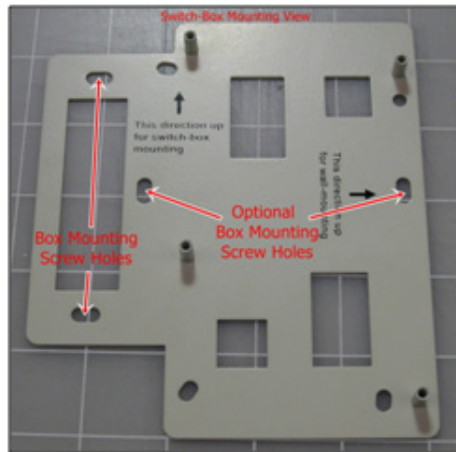
Box Mount

The accessory required for such installation is listed below:

Item	Model Number	Quantity
Wall-mount bracket	650-00234	1

1. Orient the wall mount bracket with the arrow up for box mount.

Figure 10: AP332 Box Mounting Screws



2. Use the desired holes as indicated in the *"AP332 Box Mounting Screws"* on page 17 to mount bracket to the box.



3. Follow the wall mount installation instructions as appropriate.

Below a Standard Suspended Ceiling

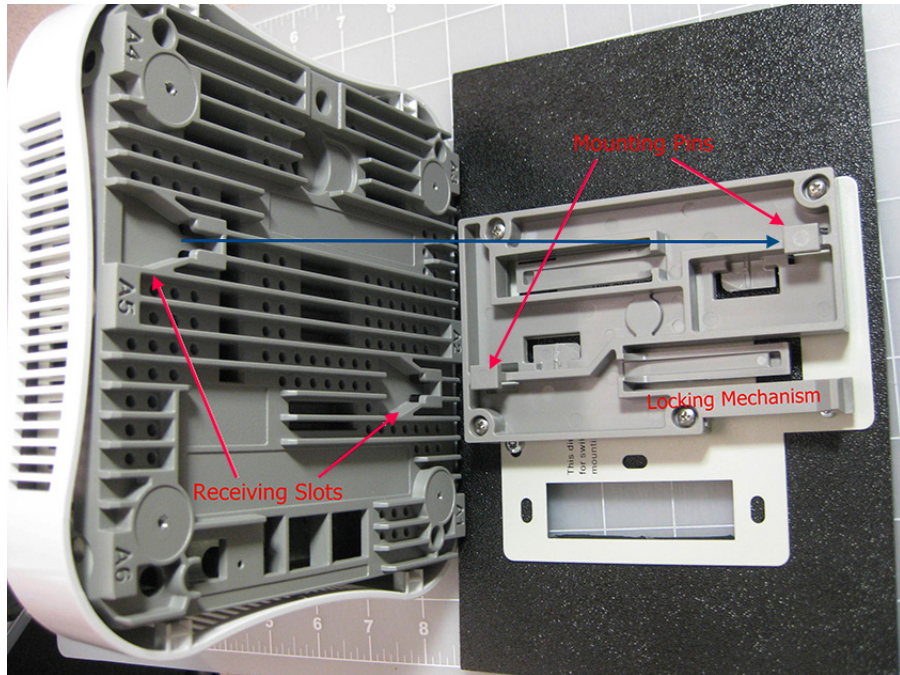
The provided ceiling mounting brackets allow the AP332 to attach to suspended ceiling T-rails. The AP ships with two different ceiling mounting bracket options to accommodate varying sizes of ceiling T-rails. Be sure to attach the correctly-sized bracket to your AP prior to attempting to deploy it. Note that each plastic bracket contains descriptive text to indicate the ceiling T-rail size for which it is designed.

AP Installation over Standard 9/16" or 15/16" T-Bar

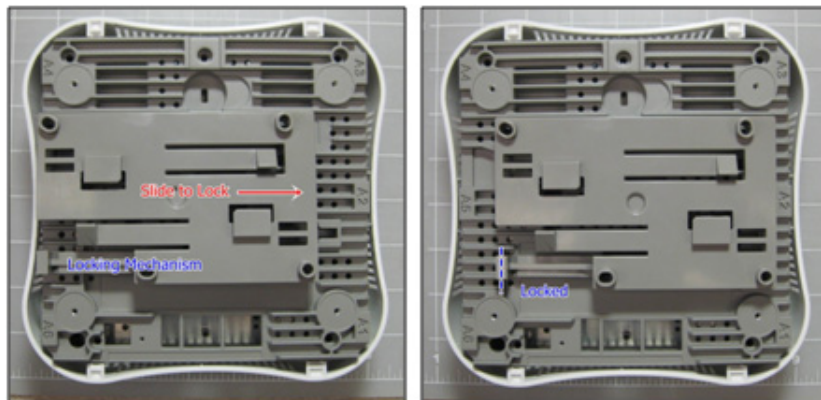
The accessory required for such installation is listed below:

Item	Model Number	Quantity
15/16" T-bar & wall-mount combo adapter	650-00232	1
9/16" T-bar adapter	650-00233	1
Wall-mount bracket	650-00234	1
Wall-mount hardware kit (4 spacers, M3x10 & M3x30 screws)	886-00098	1

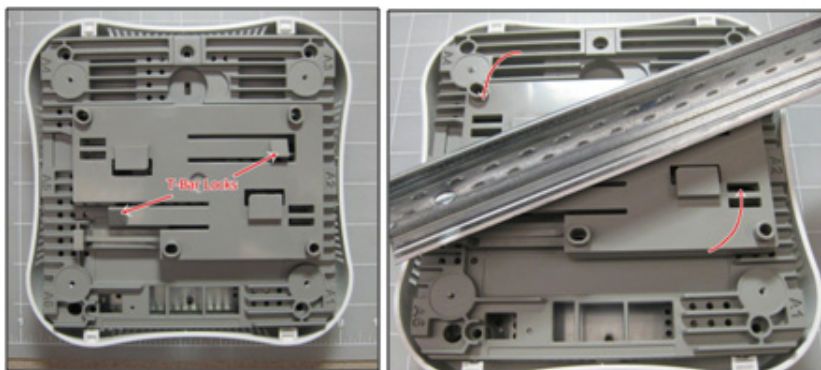
1. Orient T-Bar adapter/Wall mount adapter with the back of the AP, so that the 2 mounting pins align with the receiving slots.



2. Slide the adapter plate from left to right until the locking mechanism “clicks” into place.



3. Position the AP up to the T-Bar at an angle and depress slightly to disengage T-Bar locks.



4. Twist the AP clockwise to engage T-Bar locks. There should be 2 audible clicks.



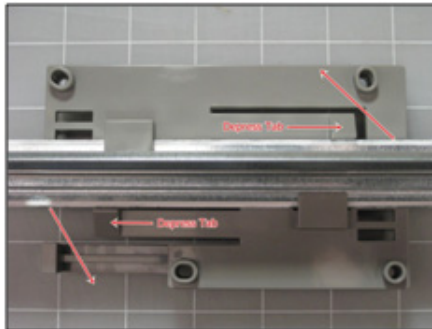
5. Verify that the AP comes online.

AP Removal from Standard 9/16" or 15/16" T-Bar

1. To remove the AP from ceiling, release the locking mechanism by pressing tab up, towards the ceiling and slide the AP from right to left until it releases.



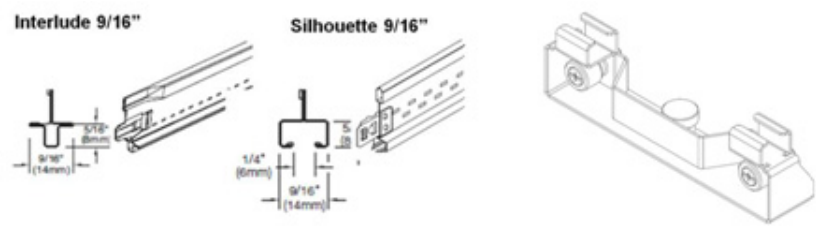
2. To remove the 15/16" T-Bar adapter/Wall mount adapter from the T-Bar, depress both T-Bar locks at the same time and twist counter-clockwise to release.



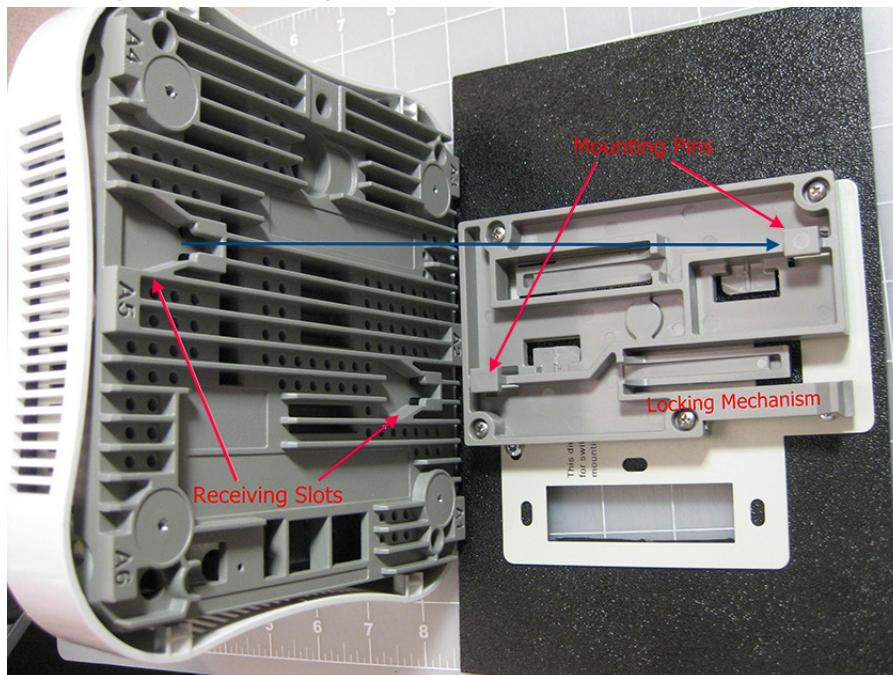
AP Installation over Interlude & Silhouette T-Bars

The accessory required for such installation is listed below:

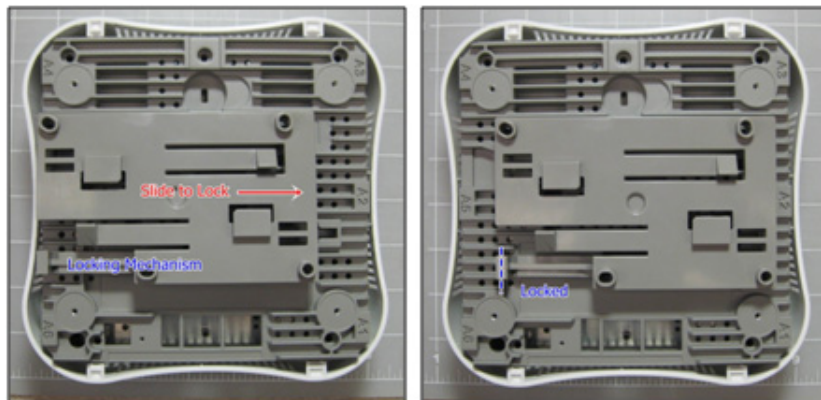
Item	Model Number	Quantity
15/16" T-bar & wall-mount combo adapter	650-00232	1
9/16" T-bar adapter	650-00233	1
Wall-mount bracket	650-00234	1
Wall-mount hardware kit (4 spacers, M3x10 & M3x30 screws)	886-00098	1
T-bar Adapter (Option)	MNT-SCRMKIT-04	1



1. Orient T-Bar adapter/Wall mount adapter with the back of the AP, so that the 2 mounting pins align with the receiving slots.



2. Slide the adapter plate from left to right until the locking mechanism “clicks” into place.



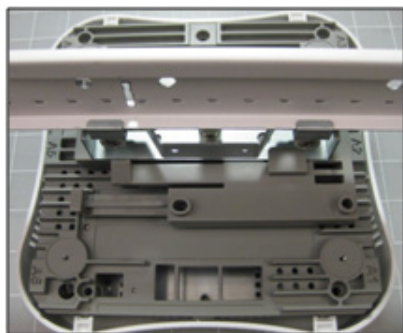
3. Install the optional accessory "MNT-SCRMKIT-04" to T-Bar. This is accomplished by loosening the two clamp screws, positioning the clamps over the T-Bar and re-tightening the screws until secure.



4. Position the AP with the adapter plate installed, up to the T-Bar with the "MNT-SCRMKIT-04" installed, at an angle. Be sure that the locating pin on the "MNT-SCRMKIT-04" is positioned in the indent on the adapter. Depress slightly to disengage T-Bar locks.



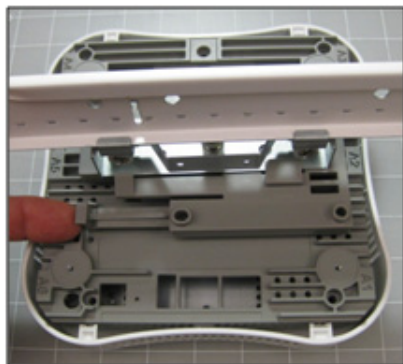
5. Twist the AP clockwise to engage T-Bar locks. There should be 2 audible clicks.



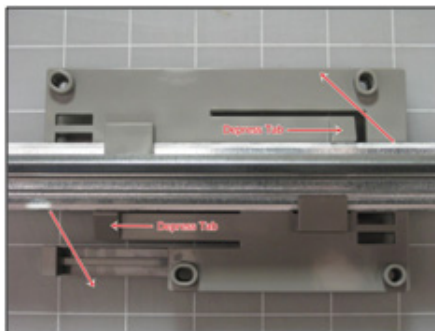
6. Verify that the AP comes online.

AP Removal from Interlude & Silhouette T-Bar

1. To remove the AP from ceiling, release the locking mechanism by pressing tab up, toward the ceiling and slide the AP from right to left until it releases.



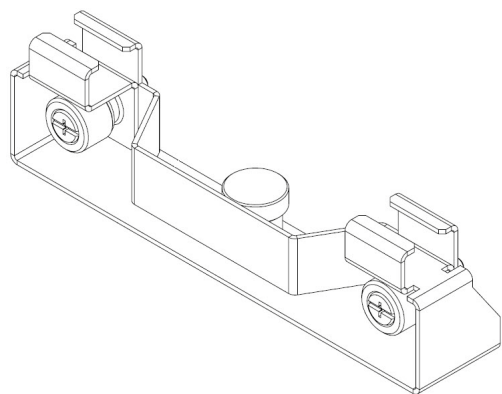
2. To remove the 15/16" T-Bar adapter/Wall mount adapter from the T-Bar, depress both T-Bar locks at the same time and twist counter-clockwise to release.



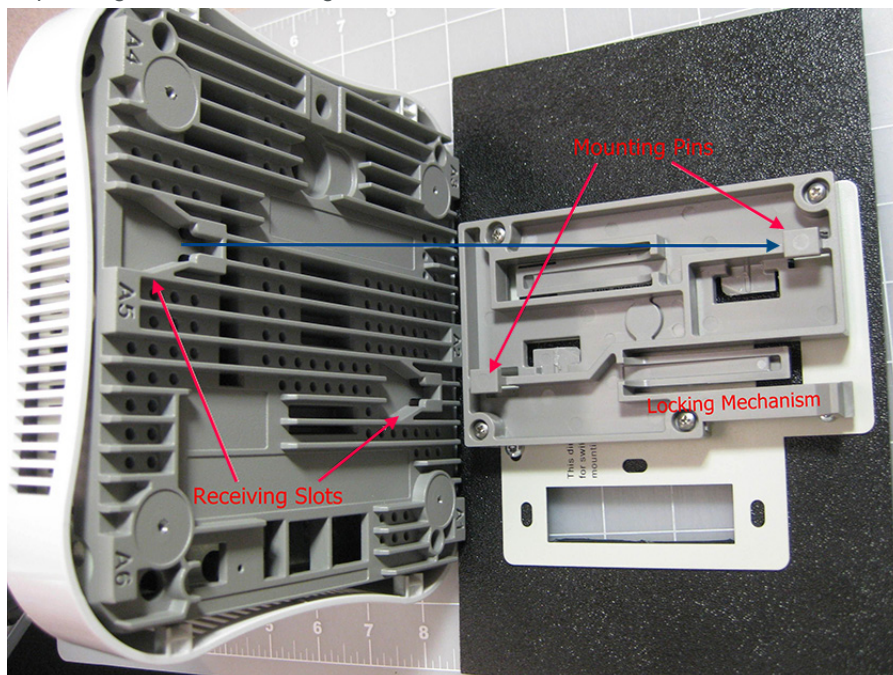
AP Installation over a Dropped Ceiling Bevel Tile

The accessory required for such installation is listed below:

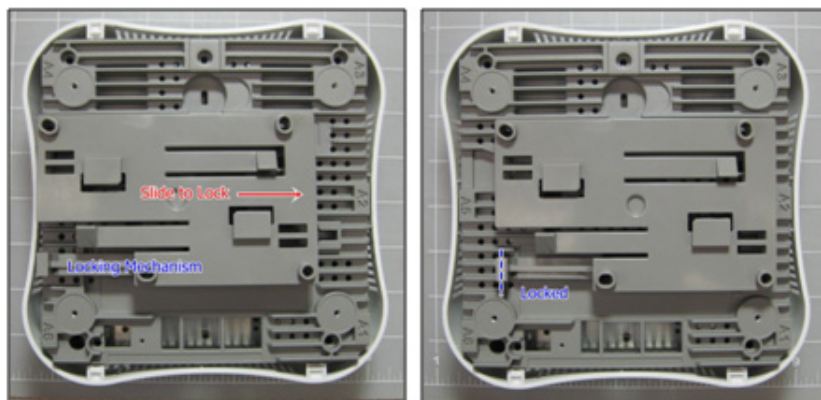
Item	Model Number	Quantity
15/16" T-bar & wall-mount combo adapter	650-00232	1
9/16" T-bar adapter	650-00233	1
Wall-mount bracket	650-00234	1
Wall-mount hardware kit (4 spacers, M3x10 & M3x30 screws)	886-00098	1
T-bar Adapter (Option)	MNT-SCRMKIT-03	1



1. Orient T-Bar adapter/Wall mount adapter with the back of the AP, so that the 2 mounting pins align with the receiving slots.



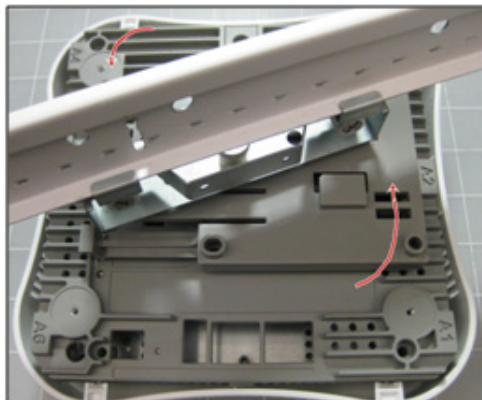
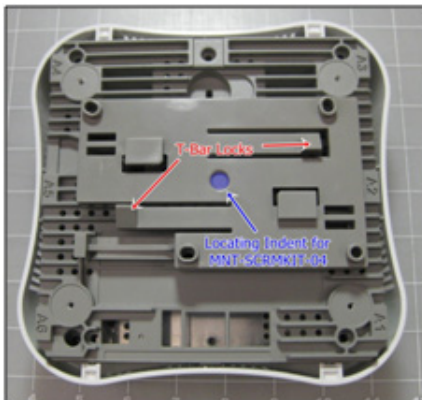
2. Slide the adapter plate from left to right until the locking mechanism “clicks” into place.



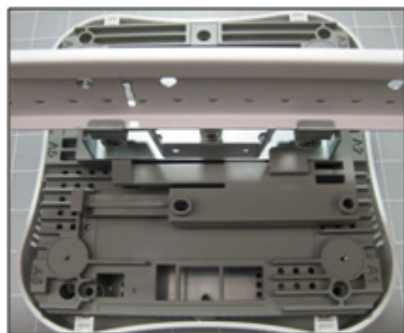
3. Install the optional accessory "MNT-SCRMKIT-03" to T-Bar. This is accomplished by loosening the two clamp screws, positioning the clamps over the T-Bar and re-tightening the screws until secure.



4. Position the AP with the adapter plate installed, up to the T-Bar with the "MNT-SCRMKIT-03" installed, at an angle. Be sure that the locating pin on the "MNT-SCRMKIT-03" is positioned in the indent on the adapter. Depress slightly to disengage T-Bar locks.



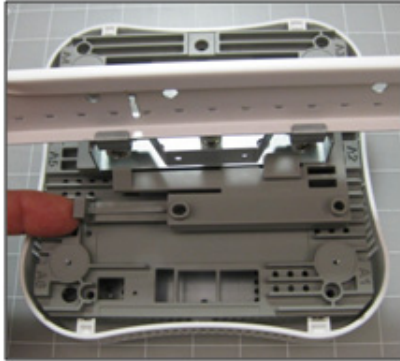
5. Twist the AP clockwise to engage T-Bar locks. There should be 2 audible clicks.



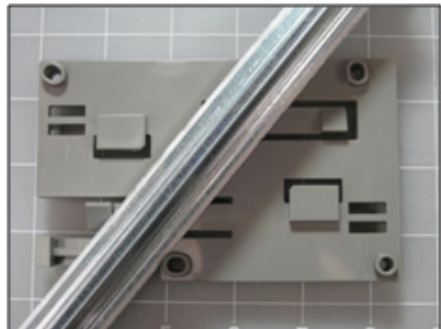
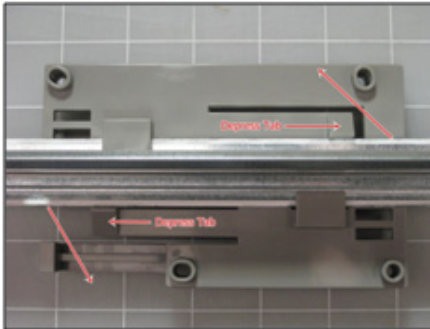
6. Verify that the AP comes online.

AP Removal from a Dropped Ceiling Bevel Tile

1. To remove the AP from ceiling, release the locking mechanism by pressing tab up, toward the ceiling and slide the AP from right to left until it releases.



2. To remove the 15/16" T-Bar adapter/Wall mount adapter from the T-Bar, depress both T-Bar locks at the same time and twist counter-clockwise to release.






Above a Standard Suspended Ceiling

By removing plastic façade, AP332 can be installed in air-handling space. Use the optional T-bar box hanger mounting kit to mount AP332 above suspended ceiling T- rails. The installation attaches the T-bar box hanger to the ceiling rails and then the AP332 attaches to the T-bar box hanger.



AP332 mounted above the ceiling has about 2-3 dBm less RF coverage than AP332 mounted under the ceiling.

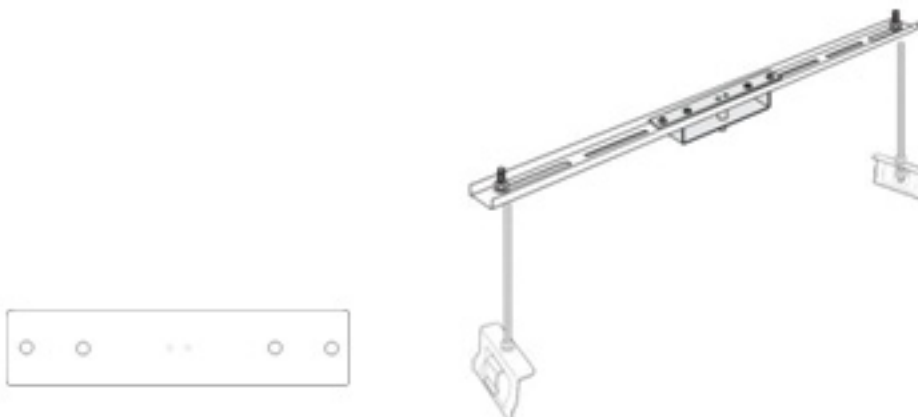
	<p>The AP332 with plastic cover removed is suitable for use in environmental air-handling space above a suspended ceiling in accordance with the Section 300-22(c) of the National Electric Code and Sections 2- 128.12 - 010 (3) and 12 - 100 of the Canadian Electrical Code. Part 1. C22. 1. Note that in order to comply with these standards, the plastic cover on the AP332 must be removed.</p> <p>Users shall only apply certified external antennas with plenum-rated cables in this installation.</p>
	<p>When installed in air-handling spaces, such as above a suspended ceiling, power the AP332 only with a PoE not a power supply.</p>
	<p>You may need to use thicker tiles to support this installation.</p>

The accessory required for such installation is listed below:

Item	Model Number	Quantity
15/16" T-bar & wall-mount combo adapter	650-00232	1
T-bar hanger (Option)	ACC-MTN-ASCMKIT 840-0071	1

1. Determine the location on the ceiling rails where the AP will be mounted and remove the ceiling tile.
2. Unpack the T-bar hanger kit.
3. Attach the mounting bar (depicted in Figure 8) to the mounting brace (which looks like a small handle) with the crossbar of the mounting kit sandwiched between them
4. Locate the 650-00232 15/16" T-Bar Adapter/Wall Mount and attach the AP to the mounting bracket by pressing the bracket's Mounting Pins (shown in Figure 2 on page 9) to the AP's Receiving Slots and sliding the bracket until it locks in place.
5. Gently press the underside of the AP against the mounting brace and rotate it into place until the locking mechanism clicks.
6. Attach the legs for the mounting kit to the T-Bars in the ceiling by sliding the clips down onto each respective bar. Remove the top nut from each leg.
7. Lower the crossbar (with the AP attached) onto the legs and screw the nuts back on top of the bar.
8. Connect one end of the PoE Ethernet cable to the Ethernet connector on the AP.
9. Connect one end of the CAT5 (or greater) Ethernet cable with PoE to the 100/1000 Ethernet connector on the underside of the AP.

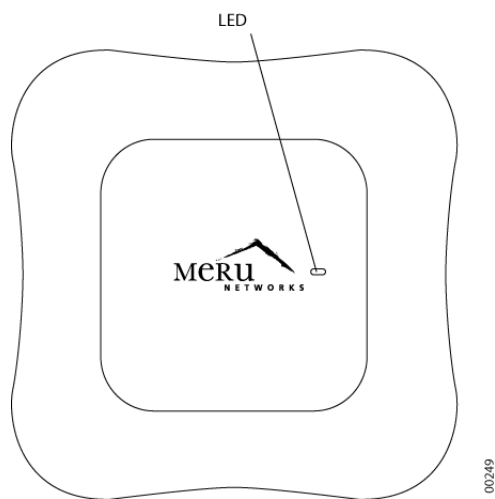
10. Check that the AP332 is operating correctly before replacing the ceiling tile to the ceiling. Verify correct operation using the LEDs, as shown in Check AP332 LED Activity.



LED Lights

When AP332 first connects to the controller (and any time the access point is rebooted), the AP initializes and then is programmed by the controller. When the AP first powers up, the LED is green. Thereafter, its color indicates its operating status.

Figure 11: AP332e Status LED



After the AP332e is connected, check the status of the LED. Its indicator state is described below.

LED Activity and Meaning

TABLE 4: *LED Activity and Meaning*

LED	COLOR	STATE	MEANING
Status	No Color	—	No power. Either there is no power or the LEDs are set to Off on the controller. Check the LED setting on the controller by clicking Configuration > Devices > AP, selecting the AP and then checking the setting for LED Mode.
	CYAN	ON	AP starting, stage 1.
	GREEN	Blinking	AP starting, stage 2.
	GREEN/ WHITE	Alternating	AP is discovering the controller.
	GREEN/BLUE	Alternating	AP is downloading configuration from the controller.
	BLUE	Blinking slowly	AP is online and enabled.
	BLUE	Blinking rapidly	AP is online and enabled. Some activity on one or both radios.
	RED/YELLOW	Alternating	AP Failure. For details, check the controller for alarms by clicking Monitor > Alarms > Pending Alarms.
	BLUE/YEL- LOW	Alternating	AP is online and enabled. One or both radios are either scanning or an admin has shut-down the radios.

Changing LED Appearance

If you want to change the appearance of the LEDs, follow these steps:

1. From the controller, click Configuration > Devices > AP, and then select the AP.
2. Select one of these settings for the LED Mode setting:
 - Normal: LEDs are as described above
 - Blink: Sets all LEDs flashing; this is useful to locate an AP
 - Dark: Turns off all LEDs
3. Click OK.

Next Steps

Now that the AP332 is installed, see the Meru System Director Getting Started Guide for instructions on initializing the hardware. Return to this chapter to check the status of the LEDs once the WLAN is operational.

5

Approved Antennas

Only approved antennas may be used in conjunction with AP332 access points. Access Points have been designed to operate with the antennas listed below. Antennas not included in this list are strictly prohibited for use with these devices. The required antenna impedance is 50 ohms.

TABLE 5: *Approved Antennas*

Meru Part Numbers	Manufacturer Part Number	Manufacturer	Gain	Description
MERU-PI623	MERU-PI623	Meru Networks	3/4 dBi	Internal PIFA dual-band antenna
ANT-ABGN-23O-W	ANT-ABGN-23O-W	Meru Networks	2/3 dBi	Dual-band Omni-directional dipole
ANT-O6ABGN-0606-O	M6060060-MO1D3620O	Terrawave	6/6 dBi	Dual band Omni-directional 6-lead
ANT-I3ABGN-0304-O	M6030040O1D1820MP	Terrawave	3/4 dBi	Dual-band ceiling mount Omni-directional 3-lead
ANT-O6ABGN-0607-PT	M6060070MP13620	Terrawave	6/7 dBi	Dual-band wall-mount patch 6-lead



Regulatory Information

The Meru Access Point (APs) must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. For country-specific approvals, see below. Meru Networks, Inc. is not responsible for any radio or television interference caused by unauthorized modification of APs, or the substitution or attachment of connecting cables and equipment other than that specified by Meru Networks, Inc. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Meru Networks, Inc. and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

Regulatory Specifications

TABLE 6: *Regulatory Specifications*

Category	Items
Safety	<ul style="list-style-type: none">• UL 60950-1• CSA C22.2• EN 60950-1• IEC 60950-1
Unintentional Radiation Compliance	<ul style="list-style-type: none">• FCC Part 15.107 - 47CFR15.107• FCC Part 15.109 - 47CFR15.109 B• ICES-003 Class B• EN 301 489-1• EN 301 489-17• EN55022 Class B• EN55024/AS/NZS CISPR 24• VCCI Class B
Intentional Radiation Compliance	<ul style="list-style-type: none">• FCC Part 15.247 - 47 CFR Ch. I• FCC Part 15.407 - 47 CFR15.407• RSS-210• EN 300 328• EN 301 893• Japan Radio (Ninsho)

Declaration of Conformity, Federal Communication Commission

Manufacturer Information

Meru Networks, Inc
894 Ross drive,

Sunnyvale, CA 94089
USA

Declaration of Conformity

This device complies with Part 15 rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Device Name	FCC ID Number
AP332e	RE7-AP332e
AP332i	RE7-AP332i

This product is FCC marked according to the provisions of FCC Part 15.



This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference. However, there is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using the integrated antennas. Any changes or modification to the product not expressly approved by Meru could void the user's authority to operate this device.

Declaration of Conformity, Industry Canada

This equipment is in compliance with the essential requirements of other relevant provisions of Directive.

Manufacturer Information

Meru Networks, Inc
894 Ross drive,
Sunnyvale, CA 94089
USA

Declaration of Conformity

The Class B digital portion of this apparatus complies with Canadian standard ICES-003. These devices comply with RSS210 of Industry Canada.

La partie numérique de Classe B de cet appareil est conforme à la norme ICES-003 canadien. Ces appareils sont conformes à la norme RSS 210 d'Industrie Canada..

Per RSS 210 A9.5 point 7:

- The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems (The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems)
- The maximum antenna gain permitted (for devices in the bands 5250-5350 MHz and 5470-5725 MHz) to comply with the EIRP limit; and the maximum antenna gain permitted (for devices in the band 5725-5825 MHz) to comply with the EIRP limits specified for point-to-point and non point-to-point operation as appropriate, as stated in section A9.2(3) (The maximum antenna gain permitted (for devices in the bands 5250-5350 MHz and 5470-5725 MHz) to comply with the EIRP limit; and the maximum antenna gain permitted (for devices in the band 5725-5825 MHz) to comply with the EIRP limits specified for point-to-point and non point-to-point operation as appropriate, as stated in section A9.2(3).
- In addition, users should also be cautioned to take note that high-power radars are allocated as primary users (meaning they have priority) of the bands 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to WLAN devices (En outre, les utilisateurs doivent également être avertis de prendre note que les radars à haute puissance sont désignés comme utilisateurs principaux (ils ont la priorité) des bandes 5250-5350 MHz et 5650-5850 MHz et ces radars pourraient cause des interférences et / ou endommager aux appareils WLAN.

- These devices are not permitted to operate in the 5600 - 5650 MHz band (Ces appareils ne sont pas autorisés à opérer dans le 5600 - bande 5650 MHz.)

For products available in the Canadian markets, only channels 1 through 11 can be operated. Selection of other channels is not authorized. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

Pour les produits disponibles sur les marchés canadiens, seuls les canaux 1 à 11 peuvent être utilisés. La sélection d'autres canaux n'est pas autorisée. Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris celles pouvant causer un mauvais fonctionnement de ce dispositif

This device and its listed antenna(s) must not be co-located or operated in conjunction with any other antenna or transmitter

Cet appareil et son antenne énuméré (s) ne doivent pas être situés ou exploités conjointement avec une autre antenne ou transmetteur

The term "IC" before the equipment certification number only signifies that the Industry Canada technical specifications were met.

Le terme "IC" avant le numéro de certification de l'équipement signifie seulement que les spécifications techniques d'Industrie Ca-nada ont été atteints

To reduce the potential radio interference to other users, the antenna type and gain should be chosen so that the equivalent isotropic radiated power (EIRP) is not more than that required for successful communication. This device complies with Class B Limits of Industry Canada. Operation is subject to the following two conditions:

Pour réduire le risque d'interférence avec d'autres utilisateurs, le type d'antenne et le gain doivent être choisis de telle sorte que la puissance isotrope rayonnée équivalente ne soit pas supérieure à celle requise pour une communication réussie. Cet appareil est conforme aux limites de Classe B d'Industrie Canada. Son fonctionnement est soumis aux deux conditions suivantes

- This device may not cause harmful interference, and
- Cet appareil ne doit pas provoquer d'interférences nuisibles, et
- This device must accept any interference received, including interference that may cause undesired operation.
- Cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un fonctionnement indésirable.

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence.

Device Name (Nom de l'appareil)	Industry Canada ID Number (Industrie Canada Numéro d'identification)
AP332e	6749A-AP332E
AP332i	6749A-AP332I

Declaration of Conformity, R&TTE Directive 1999/5/EC

This equipment is in compliance with the essential requirements of other relevant provisions of Directive.

Declaration of Conformity

Hereby, Networks Inc. declares that this unit is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

To obtain the declaration of conformity (DoC) for R&TTE Directive, please access the following URL address: <http://www.merunetworks.com>

Notice for customers: the following information is only applicable to equipment sold in countries applying EU directives. System may be operated in following countries:

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, The Netherlands, Norway, Poland, Portugal, Slovak Republic, Romania, Slovenia, Spain, Sweden, Switzerland, Turkey, and The United Kingdom.

This equipment can be operated in other non-European countries.

The following standards were applied:

- EMC-EN 301.489-1 Article 3.1 (b) of R&TTE Directive; EN 301.489-17 Article 3.1 (b) of R&TTE Directive
- Health & Safety-EN60950-1
- Radio-EN 300 328 Article 3.1 (b) of R&TTE Directive; EN 301.893 Article 3.1 (b) of R&TTE Directive

- The conformity assessment procedure referred to in Article 10.4 and Annex III of Directive 1999/5/EC has been followed.

Language	Content of Declaration
Български- (Bulgarian)	това оборудване е в съответствие със съществените изисквания и другите приложими разпоредби на Директива 1999/5/ЕО
Češka- (Czech)	Toto zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES
Dansk- (Danish)	Dette udstyr er i overensstemmelse med de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF
Deutsch- (German)	Dette udstyr er i overensstemmelse med de væsentlige krav og andre relevante bestemmelser i direktiv 1999/5/EF
Esti- (Estonian)	See seade on vastavuses oluliste Krav ja muude asjaomaste komisjoni direktiivi 1999/5/EÜ
English- (English)	This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC
Español- (Spanish)	Este equipo cumple con el krav esenciales y otras comisiones pertinentes de la Directiva 1999/5/CE
Ελληνικά- (Greek)	Αυτή η συσκευή είναι σύμφωνη με τις βασικές Krav και άλλα αρμόδια επιτροπή της οδηγίας 1999/5/EK
Français- (French)	Cet appareil est en conformité avec le krav essentielles et aux autres commissions pertinentes de la directive 1999/5/CE
Ísenska- (Icelandic)	Þessi búnaður er í samræmi við nauðsynleg krav og aðrar viðeigandi þóknun tilskipunar 1999/5/EB
Italiano- (Italian)	Questa apparecchiatura è conforme con il krav essenziali e altri servizi della Commissione, della direttiva 1999/5/CE
Latviešu- (Latvian)	Šis aprīkojums ir saskaņā ar būtiskajām Krav un citiem attiecīgajiem Komisijas Direktīvas 1999/5/EK
Lietuvių- (Lithuanian)	Ši įranga atitinka esminius Krav ir kitomis atitinkamomis Komisijos direktyvos 1999/5/EB
Nederlands- (Dutch)	Deze apparatuur voldoet aan de essentiële krav en andere relevante provisies van Richtlijn 1999/5/EG
Malti- (Maltese)	Dan it-tagħmir huwa konformi mal-Krav essenzjali u kummissjoni rilevanti oħra tad-Direttiva 1999/5/KE
Magyar- (Hungarian)	Ez a berendezés megfelel a vonatkozó alapvető Krav és egyéb releváns bizottsági irányelv 1999/5/EK
Norsk- (Norwegian)	Dette utstyret er i samsvar med de grunnleggende krav og andre relevante oppdrag i direktiv 1999/5/EF
Polski- (Polish)	Ten sprzęt jest zgodny z zasadniczymi KRAV oraz innych właściwych komisji dyrektywy 1999/5/WE
Portugues- (Portuguese)	Este equipamento está em conformidade com o krav essencial e outra comissão pertinente da Directiva 1999/5/CE
Română- (Romanian)	Acest echipament este în conformitate cu Krav esențiale și alte Comisie relevante ale Directivei 1999/5/CE
Slovensko- (Slovenian)	Ta oprema je v skladu z bistvenimi Krav in druge ustrezne provizije Direktive 1999/5/ES
Slovensky- (Slovak)	Toto zariadenie je v súlade so základnými kráv a ostatnými príslušnými útvarmi Komisie smernice 1999/5/ES
Suomi- (Finnish)	Tämä laite on yhdenmukainen olennaisten krav ja muiden asiaan liittyvien komission direktiivin 1999/5/EY
Svenska- (Swedish)	Denna utrustning är i överensstämmelse med de grundläggande krav och andra relevanta uppdrag av direktiv 1999/5/EG

This device is intended to be used in all EU and EFTA countries.



Device Name	Certification Report Number
AP332e	CE 0980
AP332i	CE 0980

VCCI Statement

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

English Translation

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. User shall install and use the equipment according to the instruction manual.

General Information of RF Exposure

International Guidelines

This Device Meets International Guidelines for Exposure to Radio Waves.

The AP332e and AP332i device includes radio transmitters and receivers. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) recommended by international guidelines. The guidelines were developed by an independent scientific organization (ICNIRP) and include a substantial safety margin designed to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

Separation Distance		
MPE	Distance	Limit
0.63 mW/cm2	20 cm (7.87 inches)	1.00 mW/cm2

The World Health Organization has stated that present scientific information does not indicate the need for any special precautions for the use of wireless devices. They recommend that if you are interested in further reducing your exposure then you can easily do so by reorienting antennas away from the user or placing the antennas at a greater separation distance than recommended.

FCC Guidelines

This device meets FCC guidelines for exposure to radio waves.

The AP332e and AP332i include radio transmitters and receivers. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) as referenced in FCC Part 1.1310. The guidelines are based on IEEE ANSI C 95.1 (92) and include a substantial safety margin designed to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

The device has been tested and found compliant with the applicable regulations as part of the radio certification process.

The FCC recommends that if you are interested in further reducing your exposure then you can easily do so by reorienting antennas away from the user or placing the antennas at a greater separation distance then recommended or lowering the transmitter power output.

Separation Distance		
MPE	Distance	Limit
0.63 mW/cm2	20 cm (7.87 inches)	1.00 mW/cm2

Industry Canada Guidelines

This device meets Industry Canada guidelines for exposure to radio waves.

The AP332e and AP332i include radio transmitters and receivers. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) as referenced in Health Canada Safety Code 6. The guidelines include a substantial safety margin designed into the limit to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

Health Canada states that present scientific information does not indicate the need for any special precautions for the use of wireless devices. They recommend that if you are interested in further reducing your exposure you can easily do so by reorienting antennas away from the user, placing the antennas at a greater separation distance than recommended, or lowering the transmitter power output.

Separation Distance		
MPE	Distance	Limit
0.63 mW/cm2	20 cm (7.87 inches)	1.00 mW/cm2



Additional Notes

Maximum EIRP

The transmit EIRP is the sum of the conductive transmit power, IEEE Std 802.11n multiple stream effect, and the antenna gain. By default, Meru AP332 EIRP is set lower than the regulatory limit with the default antenna.

Dual Concurrent Same Band Operation

With grant of additional regulatory approval and Permit-but-Ask, users may configure two radios in AP332 on the same band (i.e., both radios are on the 2.4 GHz but in the different or same channels, and both radios are on the 5.x CHz but in the different or same channels).

However, user shall expect performance deterioration due to RF collision and collocation interference. It is important that users adopt external antennas, with extended coaxial pigtail cables, with AP332e in such use case. User shall place antennas far apart to reduce interference. Meanwhile, user shall also reduce AP332e transmit power, for each radio, by at-least 3 dBm from its default setting.

Manufacturing Information

The AP332 models are built in China. Contact Meru Networks for manufacturing related information.

Distributed Antenna Systems (DAS)

Meru Networks does not certify or endorse any specific Distributed Antenna System (DAS) vendors. Meru Networks will provide support to Meru Wi-Fi customers that use distributed antennas within the terms and conditions of the MeruAssure Terms of Service and in accordance with the customer's support agreement. Meru Customer Support will support Meru soft-

ware and hardware, and will work jointly with DAS vendors to identify and troubleshoot issues, but any support related to RF issues, including RF coverage, shall be the responsibility of the DAS vendor.

Meru Networks recommends that customers use only a DAS that has been tested to work with Meru hardware and software. Meru does not provide any site surveys, design or implementation of Wi-Fi over DAS. Meru recommends that customers obtain such services from a trained and qualified systems integrator or from their DAS vendor.

Air Handling Space Requirements

When installing APs in an air-handling space, as described in Article 300.22(C) of the National Electric Code® (2008 edition, pages 70-135 and 70-136), the unit should only be powered by the Ethernet port (PoE), not by the AC-powered power supply.

Only AP332e with plastic façade removed can be applied in air-handling space.

When the product is installed in air-handling spaces, the cables employed should be suitable under NEC Articles 300.22 and 725 and marked accordingly, for use in plenums and air-handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP or CMP.

The products should be installed in accordance with all applicable, local regulations and practices. Compliance applies only when the plastic facade is removed from the AP.

Frequencies Blocked for Regulatory Compliance

These products are for indoor use only, in U-NII-1 and/or U-NII-3 band when Dynamic Frequency Selection, DFS, from 5.25-5.35 GHz and 5.47-5.725 GHz, is disabled. With DFS approval, these products can operate in U-NII-2 or U-NII-2e. To ensure compliance with local regulations, be sure to set your Access Point to the country in which you are using the Access Point.


Restriction of Hazardous Substances

European Community

This device complies the Restriction of Hazardous Substances Directive (RoHS) for its restriction of the use of certain hazardous substances in electrical and electronic equipment for European Union.

China

This device complies Administrative Measure on the Control of Pollution Caused by Electronic Information Products or China RoHS. AP332e may contain hazardous substances are marked with the EIP logo including an Environment Friendly Use Period (EFUP) value in 10 years.

AP332	Toxic and Hazardous Substances or Elements						
Component with toxic and hazardous substances	Pb (Lead)	Hg (Mercury)	Cd (Cadmium)	Cr(VI) (Hexavalent Chrome)	PBB (Polybrominated biphenyl)	PBDE (Polybrominated diphenyl ether)	
Circuit Modules	X	O	O	O	O	O	
Metal Parts	O	O	O	O	O	O	
Plastic and Polymeric Parts	O	O	O	O	O	O	
O: Indicates that the content of the toxic and hazardous substance in all the homogenous materials of the part is below the concentration limit requirement for RoHS compliance.							
X: Indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the part exceeds the concentration limit requirement for RoHS compliance.							

Underwriters Laboratories

Use only listed e information technology equipment (ITE) I.T.E. equipment.

The unit is intended for installation in Environment A as defined in IEEE 802.3.af.All interconnected equipments must be contained within the same building, including the interconnected equipment's associated LAN connection.

Suitable for use in environmental air space in accordance with Section 300-22(c) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, C22.1.



Cautions and Warnings

The cautions and warnings that appear in this manual are listed below in English, German, French, and Spanish. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Cautions

A Caution calls your attention to a possible hazard that can damage equipment.

"Vorsicht" weist auf die Gefahr einer möglichen Beschädigung des Gerätes in.

Une mise en garde attire votre attention sur un risque possible d'endommagement de l'équipement. Ci-dessous, vous trouverez les mises en garde utilisées dans ce manuel.

Un mensaje de precaución le advierte sobre un posible peligro que pueda dañar el equipo. Las siguientes son precauciones utilizadas en este manual.



When changing the orientation of the antennas, be sure to slightly loosen the knurled ring before moving the antenna. Retighten the ring afterward. Otherwise, you might damage the internal cabling in the AP.

Bei einer Neuausrichtung der Antennen muss vor Bewegung der Antenne der Rändelring leicht gelockert werden. Anschließend den Ring wieder festziehen. Anderenfalls können die internen Kabel im AP beschädigt werden.

En cas de modification d'orientation des antennes, veiller à desserrer légèrement la bague moletée avant de réorienter l'antenne. Resserrer ensuite la bague, faute de quoi le câblage interne du point d'accès pourrait être endommagé.

Al cambiar la orientación de las antenas, asegúrese de aflojar ligeramente el anillo estriado antes de mover la antena. Luego vuelva a apretar el anillo. De otro modo, podría dañar el cableado interno del punto de acceso.



The radiated output power of the access points is well below the radio frequency exposure limits. However, the Meru Access Point should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the Access Point antennas.

Die abgestrahlte Ausgangsleistung von Geräten von Meru Networks, Inc. liegt weit unter den Hochfrequenz-Expositionsgrenzwerten der. Die Meru Access Point Zugangspunkte von Meru Networks, Inc. sollten jedoch so verwendet werden, dass das Potenzial für Kontakt mit Menschen während des normalen Betriebs auf ein Mindestmaß beschränkt wird. Um die Möglichkeit einer Überschreitung der - Hochfrequenz-Expositionsgrenzwerte zu vermeiden, ist ein Abstand von mindestens 20 cm zwischen Ihnen (bzw. einer anderen Person in der Nähe) und den Zugangspunkt-Antennen zu wahren.

La puissance de rayonnement émise par les équipements Meru Networks, Inc. est très inférieure aux limites d'exposition aux fréquences radio définies par la. Toutefois, les points d'accès de la série Meru Access Point de Meru Networks, Inc. doivent être utilisés de façon à éliminer tout risque de contact humain en fonctionnement normal. Pour éviter de dépasser les limites d'exposition aux fréquences radio définies par la, il est impératif de préserver en permanence une distance supérieure ou égale à 20 cm entre l'utilisateur (ou toute personne se trouvant à proximité) et les antennes du point d'accès.

La potencia de radiación de los dispositivos de Meru Networks, Inc. está muy por debajo de los límites de exposición a radiofrecuencia estipulados por la. No obstante, los puntos de acceso de la serie Meru Access Point de Meru Networks, Inc. deben usarse de tal manera que se minimice la posibilidad de contacto para el usuario durante la operación normal. Para evitar la posibilidad de exceder los límites de exposición a radiofrecuencia establecidos por la, el usuario (o cualquier otra persona en torno) debe mantenerse a una distancia de al menos 20 cm respecto a las antenas del punto de acceso.



Exposure to Radio Frequency Radiation.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit an RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website <http://www.hc-sc.gc.ca/rpb>.

Exposition aux rayonnements à fréquence radioélectrique

L'installateur de cet équipement radio doit veiller à positionner et orienter l'antenne de telle sorte qu'elle n'émette pas un champ radioélectrique supérieur aux limites définies par Santé Canada pour la population générale. Consulter le Code de sécurité n° 6, disponible sur le site Web de Santé Canada à l'adresse <http://www.hc-sc.gc.ca/rpb>.

Exposición a la radiación de radiofrecuencia.

El instalador de este equipo de radio debe cerciorarse de que la antena está localizada u orientada de tal manera que no emita un campo de radiofrecuencia superior a los límites estipulados por Health Canada para la población; consulte el Código de Seguridad 6 que podrá encontrar en el página web de Health Canada, <http://www.hc-sc.gc.ca/rpb>.

Warnings

A warning calls your attention to a possible hazard that can cause injury or death. The following are the warnings used in this manual.

"Achtung" weist auf eine mögliche Gefährdung hin, die zu Verletzungen oder Tod führen können. Sie finden die folgenden Warnhinweise in diesem Handbuch:

Un avertissement attire votre attention sur un risque possible de blessure ou de décès. Ci-dessous, vous trouverez les avertissements utilisés dans ce manuel.

Una advertencia le llama la atención sobre cualquier posible peligro que pueda ocasionar daños personales o la muerte. A continuación se dan las advertencias utilizadas en este manual.

antenas del punto de acceso.



With plastic covers removed, this product is suitable for use in environmental air-handling space in accordance with the Section 300-22(c) of the National Electric Code and Sections 2- 128.12 - 010 (3) and 12 - 100 of the Canadian Electrical Code. Part 1. C22. 1. For other countries, consult local authorities for regulations.

Bei abgenommener Kunststoffabdeckung ist dieses Produkt zur Verwendung in einem Umgebungsluftraum gemäß Abschnitt 300-22(c) des National Electric Code und Abschnitt 2- 128.12 - 010 (3) und 12 - 100 des Canadian Electrical Code Teil 1. C22.1 geeignet. Die Vorschriften für andere Länder sind bei den örtlichen Behörden erhältlich.

Sous réserve que ses couvercles de plastique soient déposés, cet appareil est adapté à une utilisation dans les vides de construction des bâtiments selon la section 300-22(c) du code NEC (National Electric Code) et les sections 2- 128.12 - 010 (3) et 12 - 100 du Code électrique du Canada, partie 1. C22. 1. Pour tous les autres pays, consulter les organismes de réglementation locaux.

Una vez desprendidas las cubiertas de plástico, este producto es adecuado para su uso en el espacio aéreo circundante en conformidad con la sección 300-22(c) del National Electric Code (Código Eléctrico Nacional de EE.UU.) y las secciones 2- 128.12 - 010 (3) y 12 - 100 del Código Eléctrico de Canadá. Parte 1. C22. 1. En otros países, consulte a las autoridades locales competentes para informarse acerca de las normativas vigentes.



Any Ethernet cables installed in air-handling spaces should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air-handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP (Multi Purpose Plenum), or CMP (Communications Plenum).

Alle Ethernet Kabel, die in Lüftungsräumen installiert werden, sollten gemäß NEC Artikel 800.50 geeignet sein und entsprechend zur Verwendung in Hohlräumen (Plenum) und Lüftungsräumen im Hinblick auf Rauchausbreitung gekennzeichnet sein, z.B. CL2-P, CL3-P, MPP (Multi Purpose Plenum) oder CMP (Communications Plenum).

Les câbles Ethernet installés dans un vide d'air doivent correspondre aux critères de l'article 800.50 du code NEC et identifiés en conséquence comme adaptés à une utilisation dans les vides de construction des bâtiments en matière de propagation de la fumée (marquages CL2-P, CL3-P, MPP (Multi Purpose Plenum) ou CMP (Communications Plenum)).

Todos los cables Ethernet instalados en espacios aéreos deben cumplir con el artículo 800.50 del NEC y estar marcados adecuadamente para su uso en espacios aéreos y plenums en lo concerniente a la propagación de humo, tales como CL2-P, CL3-P, MPP (Plenum multifuncional), o CMP (Plenum de comunicaciones).



Indoor antennas must be positioned to observe minimum separation of 20 cm. (~ 8 in.) from all users and bystanders. For the protection of personnel working in the vicinity of inside (downlink) antennas, the following guidelines for minimum distances between the human body and the antenna must be observed.

The installation of the indoor antenna must be such that, under normal conditions, all personnel cannot come within 20 cm. (~ 8.0 in.) from any inside antenna. Exceeding this minimum separation will ensure that the employee or bystander does not receive RF-exposure beyond the Maximum Permissible Exposure according to local country regulatory approval.

Indoorantennen müssen so positioniert werden, dass ein Mindestabstand von 20 cm (ca. 8 Zoll) zu allen Benutzern und anderen Personen gewahrt wird. Zum Schutz von Personal, das in der Nähe von Innenantennen (Downlink) arbeitet, sind die folgenden Richtlinien für Mindestabstand zwischen dem menschlichen Körper und der Antenne zu beachten.

Die Innenantenne muss so installiert werden, dass sich unter normalen Bedingungen kein Personal bis auf weniger als 20 cm (ca. 8 Zoll) an eine Innenantenne annähern kann. Durch Überschreitung dieses Mindestabstands wird sichergestellt, dass Mitarbeiter oder andere Personen keiner RF-Exposition über die maximal zulässige Exposition (MPE; Maximum Permissible Exposure) gemäß FCC CFR 47, Abschnitt 1.1310 (Grenzwerte für die allgemeine Bevölkerung/unkontrollierte Exposition) ausgesetzt werden.

Les antennes intérieures doivent être positionnées de façon à respecter une distance minimum de 20 cm par rapport aux utilisateurs et aux tiers. Pour la protection du personnel travaillant à proximité des antennes intérieures (liaison descendante), respecter les directives suivantes pour assurer des distances minimales entre les êtres humains et les antennes.

Toute antenne intérieure doit être installée de telle sorte que, dans des conditions normales, le personnel ne puisse s'en approcher à moins de 20 cm. Cette distance minimale est destinée à garantir qu'un employé ou un tiers ne sera pas exposé à un rayonnement radioélectrique supérieur à la valeur maximale autorisée, telle qu'elle est définie dans les limites d'exposition non contrôlées pour la population par la réglementation de la FCC CFR 47, section 1.1310.

Las antenas interiores deben colocarse de manera que se observe una separación mínima de 20 cm. (~ 8 pulg.) respecto a todos los usuarios y circunstantes. Para la protección del personal que trabaje en las inmediaciones de las antenas interiores (receptoras), deben observarse las siguientes directrices relativas a la distancia mínima entre el cuerpo humano y la antena.

La instalación de la antena interior debe efectuarse de tal modo que, en condiciones normales, ningún miembro del personal pueda acercarse a menos de 20 cm. (~ 8,0 pulg.) de cualquier antena interior. El cumplimiento de este mínimo de separación asegura que el empleado o circunstante no recibirá exposición a radiofrecuencia por encima de la Exposición Máxima Permissible conforme a la normativa FCC CFR 47, sección 1.1310, es decir, los límites asignados a la Exposición Incontrolada/Población Civil.

